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VOL. XV NOVEMBER, 1928 No. 10

EDITORIAL

Dear Members: Time that great factor in our lives, which is ever moving onward, decrees that another year is swiftly coming to a close, and while it has been a year filled with great activity and progress in our industry, it likewise has been a year of great pleasure to the National officers to serve you, and we at this time express our appreciation of the whole-hearted support and co-operation that has been accorded us, and send you greetings for the approaching holidays.

The opportunity at this Thanksgiving time is now ours, to announce our annual meeting at Detroit, July 8, 9, 10, 11, 1929. Headquarters, Hotel Statler, and we hope that each member and branch will feel his and their individual responsibility and get papers for educational feature early, and prepare to attend this important event. It is not possible at this time to describe in detail the great pleasures, social and educational, that will be ours on this occasion, but, we trust you will make every effort to be with us, and honor Detroit branch, for their fine spirit in 1929.

PAPER: Silver Plating

F. C. Mesle, Oneida

It seems there has been no radical change in basic silver plating practice in many years. What improvements have been made have been in the nature of refinements of the basic practice, such as careful analytical control of the solution, careful attention to temperature and current density, distribution of current over cathode surface, agitation and filtration of the solutions.

"The solution will vary in composition, depending upon the article to be plated, thickness of deposit, and nature of finish. In general we recommend the double silver cyanide solution in preference to sodium cyanide when there is little difference in the price, and in some special cases at any price. When a thin deposit is required, such as on reflectors, and a large production with a minimum of finishing labor, a solution with from ½ to one ounce of silver per gallon and from four to six ounces of free cyanide should be used, with carbon disulphite as a brightener. This solution is suggested because with a large production there would be considerable loss of solution through drippage; hence the more silver in solution the greater the loss.

"But for general plating where heavy, smooth deposits are required, such as for nickel silver table ware and where speed is necessary, we would recommend a silver solution as follows:

"Silver, 3 to 4 ounces per gal.
Free cyanide, 4 to 6 ounces per gal.
Potassium carbonate, 4 to 8 ounces.
Carbon disulphite as a brightener, added in usual way to the above solution.

"I think it is important that the bright solution should be of uniform strength. It has been common practice to put disulphite of carbon in the bottom of a bottle and add silver solution or cyanide solution and shake up at intervals during a week or two and then draw off the solution and use as a brightener. The chances are that no two batches made up in this manner would be the same.

"The following method is suggested as more satisfactory. To one gallon of water add four ounces of cyanide and seven cc carbon disulphite. Shake until carbon is all taken up in solution. If put

in a shaking machine at 150 shakes per minute, it will take about five hours. This gives a brightener of uniform strength and you can be sure that one lot is the same as the next.

"The above solution will produce a uniformly bright deposit at a current density of from ten to fifteen amperes per sq. foot of cathode surface, provided the cathode is agitated and the temperature of the bath is about seventy degrees Fahrenheit.

"Current density, or amperes per square foot of cathode surface. This term is very indefinite because there are so many factors that cause an uneven distribution of the current over the surface of the cathode.

"A flat cathode twelve by twelve is hung in the vat parallel with the anodes at a current of twenty amperes. We would say a current density of twenty is being used, but the current density at the edges may be forty, and in the center only ten. If the cathode is set at an angle, the edges will receive more and more of the total current until the position of the cathode is set at right angles to anode. Likewise any change in the shape of the cathode will change the distribution and temperature, all affect the distribution of the current.

"Let us say that in thirty dozen teaspoons we have a total surface area of twenty square feet, and I tell you that I use a current density of fifteen amperes or 300 amperes on thirty dozen teas. From this it could be assumed that in the above mentioned solution at a certain temperature a c. d. of fifteen can be used satisfactorily, but this average current density of fifteen can be used only when the maximum current density does not exceed thirty. And this maximum current is controlled by the arrangement of anode to cathode. If the spoons could be racked or wired so that 100 per cent uniformity of current was spread over the entire surface of the lot, then a c. d. of thirty amperes could be used or 600 amperes per thirty dozen of teaspoons.

"Let us illustrate the other extreme. Suppose we put these thirty dozen of teaspoons in circular or (bird cage) racks, one spoon back of the other with one side of the spoon towards the anode and the other side of the spoon toward the center of the rack, and use an average c. d. of fifteen amperes. As this rack revolves in the vat the c. d. on the quarter of the rack nearest the anode would be from twenty to thirty amperes. Due to the position of the spoons in the rack the edge of the spoons towards the

anode would receive a current density of from forty to sixty. This is twice the maximum current that can be used and do good plating in this solution. Therefore, to plate teaspoons in a circular rack the current density must be seven and a half or less to keep the maximum under thirty amperes per square foot.

"Sketch 1. Because of the great variation in current over the surface of the spoons when racked this way, it is impossible to have a deposit of uniform color or thickness. (More on thickness later.)

"I have gone to some detail to explain what I assume is common knowledge because just this year a good friend of mine who has long been in the silver plating game, suggested that it was a good idea to plate knives with the blades down because the plate was always heavier on the part of the knife that was lower in the vat, but this is only true when the anode is lower in the vat than the cathode. Do ends of anodes furnish more current?

"Sketch 2. Yes, but only because of greater volume of solution that is available.

"If a dead white deposit is desired such as will help to cover emery lines on knife blades or other slight surface defects or the crystal structure of any base metal, and in finishing the work is to be burnished, we suggest a solution of

Silver.
Free potassium cyanide.
Potassium carbonate.
No disulphite of carbon and about one-half the current density suggested above, with similar agitation and temperature.

"Careful control of solution is important for uniform results. A silver solution in standard condition can be depended upon to produce the same kind of work day in and day out. Therefore, keep your solution under control. When the temperature of a solution cannot conveniently be controlled it will be found necessary to vary the current density with the change in temperature if the deposit is to be uniform.

"Effect of change in temperature on possible current density

Temperature	55	63	70	78	85
Ave. c. d.....	5	7.5	10	12.5	15
Cath. surface	20′	20′	20′	20′	20′
Amp. 100	150	200	250	300	

"For instance, if a deposit of the desired color (which I think indicates crystal structure) is produced in a solution at a temperature, say 55 degrees Fahrenheit, and at a current density of five, should the temperature be raised to about 80 degrees Fahrenheit, a current density of 13 would be required to produce the same color of deposit. As pointed out by Dr. Blum, an increase in temperature of the solution increases the size of the crystal structure of the deposited metal (hence the color changes in silver makes the deposit whiter in color). But I think this is only true when the current density is the same in the low and higher temperature in about the ratio suggested above, there will be little change in the size of the crystal structure of the deposit. In other words, to get uniform results out of a solution the current used should be as high as possible and yet not burn the deposit.

"In a warm solution of 90 degrees Fahrenheit or above, due to the poorer throwing power, it is very difficult to produce uniform color on pieces that have deep recesses or cathode surface of irregular shape. The recesses will have a white deposit and the ends or surface near the anode will be bright.

"In silver plating tableware it is important that there be a fairly uniform deposit of silver comparing one piece with another. If teaspoons are to have ten ounces per gross, it means that each spoon should have 1.4 dwt. of silver. Of course 100 per cent uniformity is difficult, if not impossible, but good practice demands that this difference be reduced to a minimum.

"The circular rack that revolves in the solution no doubt gives best results so far as uniform deposit between pieces is concerned, but it has one serious drawback in that on this type of rack the anodes are all on one side, with the result that one side of the spoon receives less than half as much silver as the other, and frequently the thin deposit is on that part of the spoon that receives the most wear.

"The thickness of the deposit is in direct proportion to the time and the current density. At 40 minutes plating time and a current density of 15, if we change the c. d. to read .0010 we have approximately the thickness of the deposit of silver, or at the above time and current the silver deposit will average .0015 inches thick. At this average thickness when there is a variation in the distribution of current as suggested above when a certain type of

circular rack is used, it means that the thickness of the deposit will vary from .0003 to .003, or the deposit will be ten times thicker in one part of the spoon than on another. Even this is not objectional provided the thin deposit is at the place of least wear, and the thickest at the place of most wear. But when racked as mentioned above the back of bowl receives only about half the average thickness or .00075" at the point of most wear.

"If we use this same type of rack and place the spoons so that the back of the spoon will be toward the anode we may still have the same variation in current and therefore thickness, but the thicker plate would be at the point of greatest wear, but we could not only put about one-third as many spoons in a rack with the same current problems characteristic of round racks.

"Sketch No. 4. A. 40 minutes' deposit at a c. d. of 15 amperes will produce a deposit .0016 thick.

"A. 80 minutes' deposit at a c. d. of 7½ amperes will produce a deposit .0016 thick.

"A. 160 minutes' deposit at a c. d. of 3¾ amperes will produce a deposit .0016 thick.

"So it is a problem of the silver plater to so arrange the area and size of his anodes to distribute the current evenly to each piece, and then unevenly over the surface of each piece so that the silver deposit will be thickest on that part of the spoon that receives the most wear when in use.

"At first thought it might be assumed that the surface area and size of the anode are the same, but they are not. If we take a silver anode 12"x12"x⅛", in this case the surface area and size would be the same.

"If this same anode is corrugated, the size of the anode would be reduced but the active surface area would remain the same. Now, if we cut this same anode into strips some two inches wide and some four inches long, we could reduce the size or enlarge it with about the same surface area of the anode, or we could so arrange these strips that the center of the anode would have more surface area than elsewhere. By careful study of our needs we can put the thick deposit of silver where it is most needed, or direct the flow of current as we desire, when it is important enough to justify the additional care and expense.

"Of course agitation is important but has its limitations, espe-

cially when we are working toward control of distribution of the silver. Agitation makes for poorer throwing power. It seems that every factor that makes possible faster plating also tends to reduce throwing power.

"To plate a thick smooth silver deposit the solution must be clean and free from small particles of metal that flat from the anodes. To have the anodes enclosed in cloth bags and frequent filtering of solutions is a help in this direction." (Applause.)

Chairman Smith: Gentlemen, you have heard this paper by Mr. Mesle on silver plating. It is now open for discussion. I will allow each man who wants the floor a minute.

Mr. Wittig: In the formula he gave us for burnishing, I believe he said three to four ounces of silver metal per gallon, and one to three ounces of free cyanide. Is that right? (Assent.)

Mr. Pearson: Mr. Mesle stated that potassium salts had been preferred rather than sodium. What difference is there in the use?

Mr. Mesle: The difference, we find, of course there is quite a little discussion on that, but it is our experience that we can always get a much better dull deposit from a potassium cyanide than is possible from a sodium cyanide. I am not prepared to say why.

Dr. Blum: I would like to ask whether you estimated the amount of brightener, when you have any method of controlling the concentration. In other words, how many parts of carbon disulphide approximately are in the solution, or have you anything to control it?

Mr. Mesle: I haven't any means of controlling it yet. We are just governed by the appearance of the work.

Dr. Blum: May I ask this question: about how much—your stock solution is about one part in five hundred of carbon disulphide, how much would you add to a hundred gallons of solution in the beginning if making up entirely new baths?

Mr. Mesle: From four to six ounces per hundred gallons; it is very small. It is a millionth, four to five ounces per hundred gallons.

Question: How often do you add it to your tank?

Mr. Mesle: Daily, sometimes hourly—not quite that often, but whenever it is required from the appearance of the work.

Member: I would like to ask you to explain a little bit more

to us about what you term a better plate from the cyanide potassium versus the sodium.

Mr. Mesle: For instance, we take knife plating and when sodium cyanide is used an attempt is made to make a white deposit. That deposit will be more difficult to finish, will show the polishing lines, emery lines, much more than when a desposit under exactly the same conditions is produced in a potassium bath. The deposit seems to burnish up better, cover over the slight basis defects. That is the main point. It lies down better, is easier to burnish and covers the polishing lines a lot better.

Question: Have you had experience with an overdose of carbon? May I ask what do you suggest as a cure for that sulphide solution when you have the overflow?

Mr. Mesle: Somebody put some pure carbon into our plating bath and didn't know what happened until we discovered the operator concluded there was bisulphite of carbon in the bottom of the bath along with the solution he should have put in, and that upset our plating equipment for a while. We found it necessary to filter the vats and soak up that carbon. That is an extreme condition and when there is an overdose it is just a matter of a day or two before it gets back to normal. That was an extreme case. It happened a long while ago. I remember at that time we had to filter every vat we had in the room before we could get good work.

Drawings indicate the approximate thickness of the silver deposit over the surface of a teaspoon in inches. The total deposit of silver—14 ounces per gross or 48 grains per spoon.

#AA was plated in a double row, rack, back of bowl toward the anode, about three inches between rows, and one-fourth inch between spoons. The rack was of light construction and the spoon held at bowl very close to handle, with very little shading of the spoon by the rack.

This spoon had a sectional plate back of the bowl that was visible on the finished spoon.

#A is a spoon of outside manufacture. I do not know how it was plated, but analysis indicates about as follows: That this spoon was plated the same as #AA except that the rack was of heavier construction. The spoon was held in the rack further up on the bowl, these two factors causing more shading of the bowl near the handle. The rows were closer together and the

spoons nearer together. This difference in rack would explain why #A is thinner in the bowl and on back edge of bowl.

This spoon had a light sectional plate on back of bowl that was not visible on the finished spoon.

#B. Is a spoon of outside manufacture and analysis indicates plating conditions about as follows: Plated in a single row around a circular rack, with spoons very close together—back edge of one side of bowl toward anode, and the other side toward the center of the rack, two-thirds of back of bowl shaded by the bowl of the next spoon. No sectional plate on this spoon.

#C. Analysis indicates this spoon was plated in a double row rack, the spoons set at an angle about the same as #B, so that the back edge of spoon is toward the anode and the other side of spoon toward the center of the rack. The rows were fairly close together but the spoons much further apart than in #B, no sectional plate on back of bowl.

#D. Plated in a double row, rows two inches apart, spoons about 1 inch, with edge of one side of bowl toward anode and the other edge of bowl toward the center of rack. Little or no shading—no sectional plate on back of bowl.

The drawings should help explain the effect of different wiring or racking methods in the distribution of the current over the surface of a cathode.

The total surface area on the different spoons shown in the drawings were not the same. I would estimate the area of #B and #C to be about 20 per cent more than on the other spoons, the other three spoons were about the same surface area.

We have attempted to show, by these drawings, the difference in results produced by just a difference in racking methods, of a single and double row of spoons in a rack; two, three and four "deck" racks would produce still different results. A straight or curved "deck," the distance the rows are apart on the different "decks" of the same rack are all important factors that affect the distribution of the deposit over the spoon—and the deposit on one spoon in relation to the other, to say nothing about the different methods of wiring spoons for plating.

It is not unusual to find spoons or any flatware pieces with from three to four times the thickness of silver on the back of the handle than on the back of the bowl, and vice versa, which suggests that there is lots of opportunity for improvement.

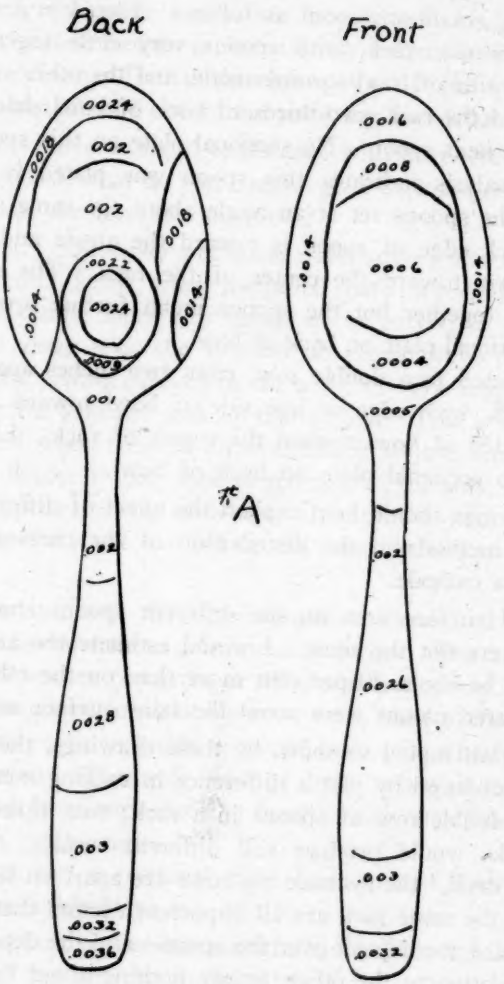
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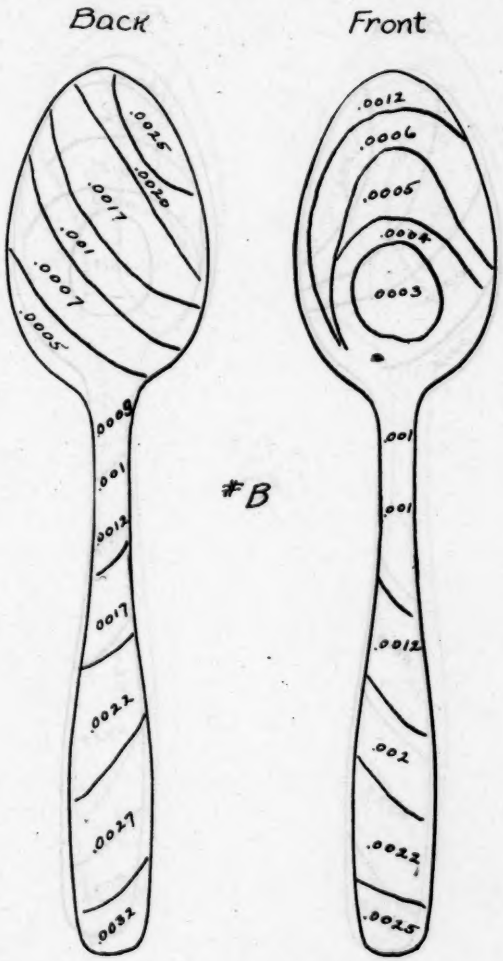
Fig A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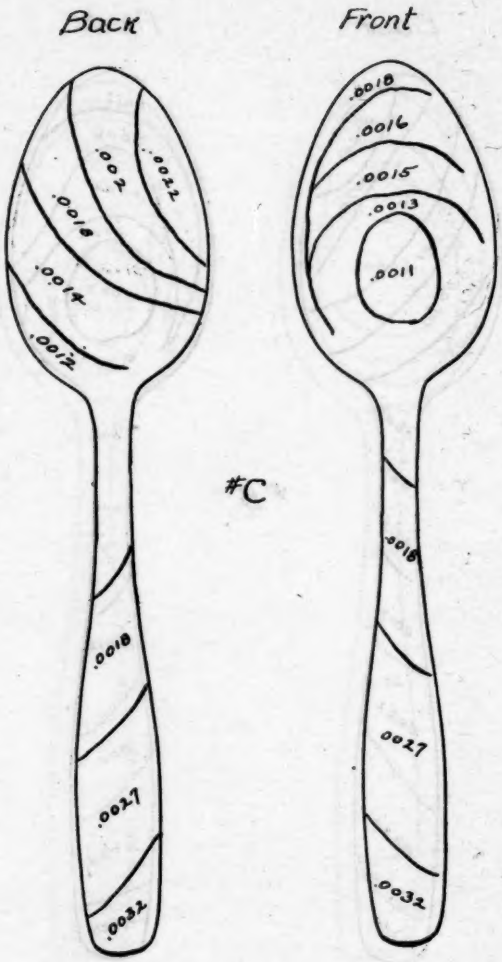
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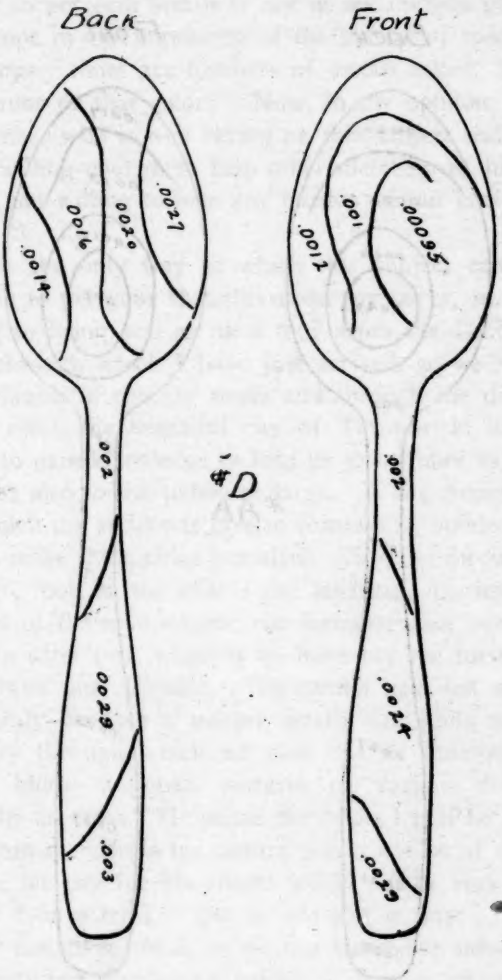
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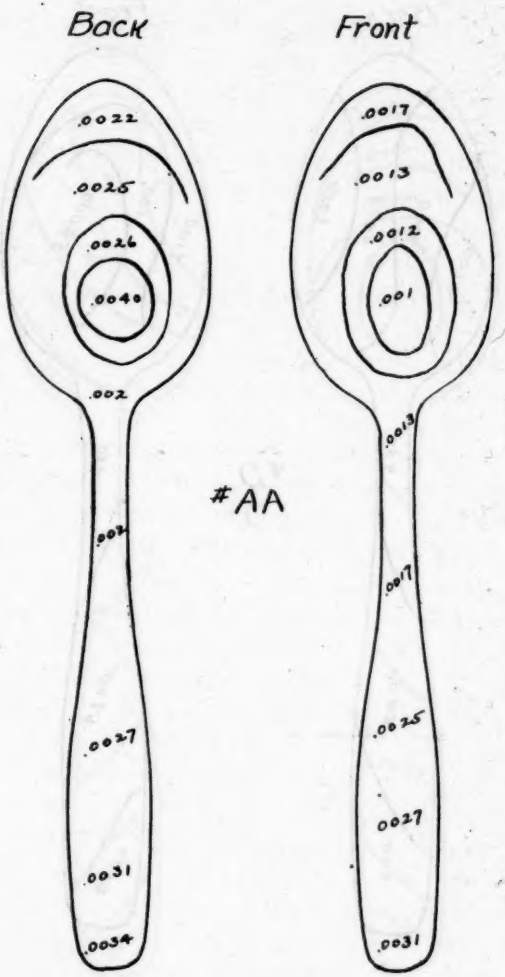
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THE FINISHING OF METALS IN ODD COLORS

Thomas A. Gardner, New York

"In presenting this paper, I do so with the realization that these finishes are not new to all platers assembled here at this convention, but at the same time it is one of the hardest tasks a man can undertake to perform and it is not in my opinion given a broad enough scope in our improving of the platers of today.

"How many times are finishers of metals asked, 'How do you get this color or that color?' Now, in my opinion, each branch has a member who is well versed on this subject and also will be able and willing enough to help other members of his branch, as I, myself, am willing to help any brother of our craft throughout the A. E. S.

"This is the only way in which this subject can be brought before you to get your thoughts upon my paper, so, therefore, I am going to bring you as on a tour from the United States to Canada, through which I have just arrived, as we ride over the miles of beautiful country roads and through the different cities until we reach the beautiful city of Toronto, in which we are gathered to gain knowledge to help us to be more valuable to our employers; also to the public at large. While riding, we get the effects which the architects give to contracting builders in all their efforts to make these cities beautiful. Now, as through the country we go, look at the effects the landscape gardeners put into the homes of the millionaires; the farmers, also, have their vegetables, row after row, which if we have any eye for beauty immediately draws our attention. We cannot help but realize nature can certainly produce a picture worth our while to look upon. Every city through which we pass has its museums of art of different kinds, antiques, pictures of various colors blended together by an artist. He paints the colors but if he did not know how to gain the effects his picture would not be of any value, so, therefore, his pay for his efforts would not be very great.

"What I have tried to put before you is this: Do we realize there are metals to finish so we can blend our colors with those of the architect, landscape gardener, farmer or artist without spoiling the beauty of the picture? They all have the instruments with which they work; we also have instruments which are to be used for our work. They are more commonly called chemicals, the chief of which in finishing is the combination of sulphur and metals. Mine are as follows:

"Copper Sulphate Cu SO_4.

Nickel Sulphate Ni. SO_4.

Iron Sulphate, or chemically called ferrous sulphate Fe SO_4.

Potassium Chlorate $KCLO_3$, etc.

"Just one question that will be put to you to answer for yourselves, and that is this: When an artist starts out to get the different colors that he will use on a picture, what does he do? Gets the main paints to be used to obtain his own colors. Does he keep on mixing after his color is there? No, he does not. Then why do a great many finishers keep mixing when they have solutions in working order? They only get bad finishes, as you can see if you care to look at the sample marked 'too much chemical in solution.'

"Sulphur is our predominating element, so with your kind attention I will explain its chief value. As platers we know, or ought to know, that when we rub silver with any food or, in fact, anything that contains sulphur, the sulphide of silver is obtained; silver turning black. The reaction taking place is thus, for example: 2 Ag plus S equals Ag 2 S.

"Most of the metals when heated with sulphur combine energetically; the sulphide being formed. Sulphur also unites with non-metals such as CL, chlorine and O oxygen, to form chlorides and oxides respectively. Sulphur is slowly oxidized to sulphuric acid by the oxygen of the air in conjunction with atmospheric moisture, thus:

"2S plus 2 H_2O plus $3O_2$ equals $2H_2SO_4$.

"Again I say add just enough chemicals or a poor finish is the result.

"Sulphur molecule will be explained here and believe it will bear me out when I say it is the chief element to contend with in finishing. Experimental work of others shows us the more heat used the higher your sulphur content will be. At 500° C. the molecule contains six atoms of sulphur. It is, therefore, hexatomic at this temperature and may be written thus: S6. Increasing temperature to 1,000° C., the molecule becomes diatomic and written S_2. At 2,000° C. there is evidence to show that the molecule partially, at least, dissociates into atoms of S. It is also possible that at temperatures between 500° C. and 1,000° C. some or all of the molecules S_2, S_4, and S_8 are present.

"The oxides and acids of sulphur are as follows: Sulphur

dioxide SO_2, sulphur trioxide SO_3, sulphuric acid, H_2SO_3, hyposulphurous acid $H_2S_2O_4$; sulphuric acid H_2SO_4.

"Hoping this will put you right with regard to element that you are dealing with and main one to deal with. I will now proceed with manipulations and formulas to obtain these colors which I hope will prove of value to each and every one of you here present.

"We will deal for formulas as marked starting with one and ending with five in No. 1 solution. To obtain these finishes, brush with No. 2 pumice or in fact any pumice you are using, a scratch brush wheel, and then immerse articles in solution composed as follows: Water (H_2O) 1 gal.; copper sulphate $CuSO_4$, four ounces; single nickel salts, $Ni\ SO_4$, 2½ ounces, potassium chlorate, 1½ ounces, ferrous or iron sulphate, $Fe\ SO_4$, ¼.

"Be sure you have temperature, 180° to 200° F. Color depends upon time of immersion.

"In seeking to obtain a darker color, brush very lightly, not using any abrasive, rinse off in cold water, H_2O, immerse again in solution. Brush dry, then lacquer and finally to get eggshell gloss use wax with equal parts of turpentine and linseed oil.

"No. 2 Solution. We obtain samples 6, 7, 8 also greens can be produced with this solution: Water, 1 gal. copper sulphate ($Cu\ SO_4$) 4 ounces; single nickel salts ($Ni\ SO_4$), 1½ ounces; ammonia chloride (NH_4CL), 1 ounce; copper acetate, Cu ($C_2H_3O_2$), 21¼ ounces; potassium chlorate (K C L O_3), 1 ounce; sodium hyposulphite, 2 ounces.

"No. 3 Solution. This is very good for antique finishes upon brass or heavily brass plated work: Water, 1 gal.; single nickel salts ($Ni\ SO_4$) 1-3 ounces; sodium hyposulphite, 6 ounces.

"No. 4 Solution. For crystalizing effects: Sulphuric acid ($H_2S\ O_4$), 1½ gals.; potassium bichromate, 1 lb. Then immerse in No. 2 solution to obtain brown tones.

"No. 5 Solution. With this solution we buff to a high color, then immerse in solution and using a soft cloth wheel about 4" to 6" in diameter; water, 1 gal.; copper sulphate, 4 ounces; potassium chlorate, 1 ounce; single nickel salts, 4½ ounces; iron sulphate, ⅛ ounce.

"No. 6 Solution. Copper sulphate, 4 ounces; single nickel salts, 8 ounces; potassium can be omitted if you want, but it seems to work more quickly by adding about one ounce to a gallon; cream of tartar, one ounce.

"There is one sample in silver and nickel which I have to make for a furnisher of ships, most always it is nickel.

"Procedure for Obtaining this Finish: Take your article and cut down on a rag wheel and dip in your regular acid dip but be sure it is not too hot. Then mix up flower emery, flower pumice, and machine oil or linseed oil and brush on a small brass wire wheel. Wash in potash, then being sure it is clean, plate either in nickel or silver, then lacquer. This seems simple but be sure you have your hands dry and lacquer immediately or it will stain quickly. You also see on my sample board a bronze plated piece which is in great demand at the present time in banks. The solution I use for this is my copper cyanide, then brass flash, and lacquer with gold dye lacquer, which is made as follows:

"Dissolve eight grams of dragon's blood, eight grams of gamboge. These are dissolved separately in sixty ounces of alcohol. Be sure you make up these stock solutions and let stand for two or three days' time, in order to draw strength of these mentioned dyes. Then take about 10 cc's composed of six cc's of dragon's blood, four cc's of gamboge. You need not use as much of these if you find your color stronger than desired, using above quantity in your regular lacquer jar. The one which we use is one pint. The gold colored ones are done the same way, omitting plating.

"One marked our regular stock bronze is brushed and run alternately through these dips. Make one solution composed as follows: One ounce of either liquid sulphur, polysulphide, or sulphuret of potassium in 10 gals. of water. Setting dip as follows: 3 ounces of sulphuric acid, one ounce of nitric acid, 10 gals. of water.

"In closing my paper I will tell you just a few more points. Do not put in too much ferrous sulphate, nor chemicals and be sure solutions are always heated between 180° F. to 200° F. These colors are lasting as there are some samples on the board since last convention held by A. E. S., in Toledo, Ohio, and still they are not spoiled. With a little practice any one can obtain these colors. If at any time there is anybody who desires to obtain information upon these colors, or others, I would be only too glad to be of service to them, if they will write to my home address or Emeralite Desk Lamp Company, H. G. McFaddin Co., 38 Warren Street, home of the light or lamp which is noted for the daylight which is 'kind to the eyes.'

"All I ask is that some members get benefit from these solutions and it will be a great satisfaction to me as we are banded together to give knowledge to each other. I hope every one of you will feel the same towards helping each other, then the society will mean to its founder what he intended it to be. Thank you."

NEWARK BRANCH

Our September 7th meeting was opened by President George J. Wagner with 29 members and visitors present. Four were elected to membership.

Mr. Fred Matts from Cleveland, Ohio, was present, and gave a talk on the prosperous conditions in Cleveland, also on the experiments of a Cleveland Branch member with spotting out on oxidized copper escutcheon plates. Mr. E. Troxler was present and spoke on the spotting out problem.

Messrs. Smith and Conley spoke on Palladium plating. Secretary Clark spoke on the nickel plating of scissors and shears in hot and cold solutions.

Chromium plating on die castings was discussed by several members.

The subject for discussion at the September 21st meeting will be, "The Best Nickel Solution to Use on Articles Which Are to Be Chromium Plated."

Meeting adjourned at 10:40 p. m.

Royal F. Clark, Secretary-Treasurer.

WORCESTER BRANCH

The third meeting of the Worchester Branch of the American Electroplaters Society was held October 25, 1928, in the Directors' Room at the Chamber of Commerce. The meeting was called to order at 8:20 p. m. by Vice-president Jones, who reported that President Brunell was operated upon for appendicitis last Friday and was resting comfortably. Secretary Bryant reminded the members that annual dues were due and payable. He also reported that the Branch had seventeen members and that three more were being admitted.

Vice-president Jones then called upon Mr. Frank J. Clark, who introduced Mr. E. A. Coady, of United Chromium, Inc. Mr. Coady gave a very interesting talk covering the development of chromium plating and the patent situation, and also told of present plating practices. A number of questions were asked concerning cleaning and preparing the material to be plated and the proper process of nickel plating. Mr. Clark and Mr. McDermid joined in the discussion.

The Secretary was instructed to express to President Brunell the sympathy of the Branch and its wish for his speedy recovery.

The meeting adjourned at 10:05 and was followed by informal discussion.

Roger H. Bryant, Secretary-Treasurer.

A. E. S. PAGE

Assembled Expert Scraps With and Without Significance

There is a type of business man who demands prohibitive prices for his own merchandise, but is unwilling to pay a nickel for anybody else's.

The next time a man wants to buy your goods at *his price,* ask him if you can buy his at *yours.*

—Frank Irving Fletcher.

One of the first lessons to be learned in Getting On is, that the woods are full of people trying to prevent other people from getting out.

—Frank Irving Fletcher.

The successful man who takes himself for granted must not be surprised if other people refuse to take him seriously.

If what you are doesn't mean more to you than what you have, it simply sheds new light on what you are.

—Frank Irving Fletcher.

Personals

J. Oberender of the Bridgeport Br., is a pretty sleek guy after 25 years of married life. Speaks pretty well for Mrs. Oberender, as a caretaker of John.

Branch Secretaries and Members: Kindly send in items for our personal column and let's get acquainted.

Novel Clock

A beautiful and novel clock is very large and banded about the edge in silver. The back is of a dull green and the figures are placed upon a circle of silver in the center.

The people most apt to come out on top are those who get to the bottom of things.

Never Grasped a Hot Poker

There's a time to part and a time to meet,
There's a time to sleep and a time to eat,
There's a time to work and a time to play,
There's a time to sing and a time to pray,
There's a time that's glad and a time that's blue,
There's a time to plan and a time to do,
There's a time to grin and to show your grit,
But there never was a time to quit.

—Florida Power and Light Magazine.

LETTER TO BRANCHES FROM MESSRS. HOGABOON AND SIZELOVE

Dear Mr. Secretary:

You and the members of your Branch are certainly in accord with the plan outlined in the October Review by President Horace Smith. This plan will make the whole Society a Research Staff and each member an important member of it.

With co-operation, invaluable data of a practical nature can be assembled. While it is desired to obtain all the detailed information possible, it is realized that many members have not had training in obtaining research data. You do know plating and you do know what is good work and what is poor work. You also know when a solution is working well and what to expect from such a solution. You can read a voltmeter and an ammeter. You may not be able to write a technical report but you can put down some figures and tell in plain words what they stand for. That is all that is wanted.

When these figures are received, the committee will go over them and put them into such a shape that the results obtained by you and the other members can be compared. These results will be sent to you with suggestions for a further investigation. When this has been done a few times, data will have been assembled that will have a value that cannot be estimated.

The preliminary reports will also be published in the Review. The final report will be presented at the Detroit Convention as the work of the members of the Research Staff of the American Electrotypers Society and you are going to be a member of that staff.

The committee thinks it advisable to take some problem that is not complicated and one on which every member can work.

"How much metal should there be in a nickel solution run at room temperature to obtain the best results.

A.—Still solutions. A.—Barrel plating solutions."

You know that at the present time the metal content varies from 2 oz. to 6 oz. per gallon. Forget the argument that different kinds of work require different metal content. Do it your way, but let us determine once and for all time what metal content gives the best results. As to the formula—for the first tests, use your own, the one with which you are most familiar.

Questions to Answer

1. The composition of the solution. If possible give the analysis. A method for volumetric analysis is attached. The committee will analyse solutions for those who do not have the facilities.

2. Give voltage, amperage, and temperature during test.

3. State the square foot area of the anode and the cathode surface. If this cannot be given send the committee a representative sample of plated work stating exact length of time it was plated. The voltage and the temperature of the solution. Don't guess.

4. At what pH was the solution operated? State how the pH was measured and temperature of the solution tested.

5. The kind of metal plated.

6. Give your reasons for believing that the metal content of the solution was the best.

7. Write a brief story of the discussion of your work at the meeting of your Branch Society.

Do not hesitate to do your bit in this work. Your views, no matter what they may be, are earnestly solicited. They will be kept confidential if so desired. There will be no criticism of any work done. The facts alone will be published and discussed. You will receive the benefit of the results of this work and will be a part of the first concerted effort to standardize plating solutions and methods. We want you to help.

Thanks for the co-operation.

P. S.—Send all communications to Box 30, Matawan, N. J.

PITTSBURGH BRANCH

Meeting held the evening of November 2nd in the downtown branch of Y. M. C. A. was very well attended. After we finished our regular business and electing one new member, Mr. S. H. Renton, 434 Fulton Bldg., to an associate membership, our Vice-president, Mr. John Lohstoeter, turned the meeting over to our good friend, Clarence Van Derau, of Mansfield, Ohio. Mr. Van Derau gave an excellent talk on Chromium Plating as carried on at the Mansfield plant of the Westinghouse Electric and Manufacturing Co. He not only spoke of chromium, giving several new ideas upon how to do a real job, but touched upon several other subjects that all good platers are interested in. This talk was one of the best that we have listened to for a long time, and from the interest taken by the large gathering present, know that his trip to Pittsburgh was not in vain. Pittsburgh Branch will have many other such meetings in the future, and we know that our members will appreciate each and every meeting.

S. E. Hedden, Secretary.

CHICAGO BRANCH

The regular monthly meeting November 10, 1928, at Atlantic Hotel, was opened in due form with President Meyers presiding and all officers in their respective stations.

The regular order of business was the first routine of the evening, reading of minutes, bills, etc.

We had one application for membership. Mr. O. E. Servis, Librarian, then took charge of the meeting and found several questions in the box.

Mr. Harold Faint then assumed command and in masterful way proceeded with his series of lectures on Preliminary Chemistry, topic being "Atoms, Molecules, Compounds and Mixtures."

We had a fine attendance and much interest is being manifested in Mr. Servis' and Mr. Faint's work this winter.

Meeting adjourned at 11 p. m.

Secretary.

PHILADELPHIA BRANCH

The regular monthly meeting of Philadelphia Branch was held November 2nd with the President, George Gehling, presiding, with a large attendance.

Banquet committee reported having secured good speakers for the educational session of the annual affair November 24th. Supreme Secretary-Treasurer's quarterly report was read and well received.

Mr. S. T. Lunbeck gave an interesting talk on the routine of his plating and polishing departments, explaining formulas, cleaners and polishing materials. This talk was quite a treat and was appreciated by those present.

Question was asked how to keep brass anodes clean. Answer—Add a small quantity of caustic potash to the solution.

Philip Uhl, Secretary.

MILWAUKEE BRANCH

The October educational meeting of Milwaukee Branch, A. E. S., was held at Lipp's Hall Thursday, October 18th.

The subject of this meeting was the "Upkeep of Chromium Plating Baths." There was a large attendance at the meeting, with visitors from Kenosha, Manitowoc and Chicago.

Several very interesting papers were read on chrome plating. There were also some very fine samples of chromium exhibited. Because of the lateness of the hour, the subject will be contitnued at our next meeting, November 15th, at which time a full report of both meetings will be given.

R. M. GOODSELL, Librarian.

DETROIT BRANCH

Detroit Branch, A. E. S., held its regular meeting on Friday evening, November 2nd, at the Hotel Statler. This being an educational meeting the speaker of the evening was introduced by Mr. H. J. Jameson, the chairman of the Educational Committee. Detroit was fortunate in securing Dr. Wm. Blum, one of the foremost authorities on chromium plating, who gave a very interesting and educational talk to an audience which filled all available space. Our members are showing every interest in the efforts of its officers and we all look forward to the 1929 convention, to be held July 8, 9, 10 and 11 in our city—the banner event in the history of our organization.

Chas. W. Phillips, Secretary and Treasurer.

The 1929 convention of the American Electroplaters Society, sched-

uled for July 8-11 at Detroit, is to include many innovations calculated to attract the interest of those connected with the industry. Technical papers will be grouped together under general subjects and presented in symposium form. These papers are being prepared by specialists within the society membership and by the leading research workers in the electroplating and electrochemical field.

An exposition of unusually fine electroplated products is being arranged to take place of the customary equipment exhibits.

Detroit, known as the Convention City, has everything that contributes to the pleasure of its guests, and the members and friends of the A. E. S. are assured of a highly enjoyable and educational visit in Detroit next July.

Herewith are names of various committees elected to make this the best convention yet. Watch Review for monthly announcements of our progress, and wish all Branches would kindly get their requests for papers to members at once so that we may be able to program them early, and we solicit at this time your every co-operation.

Respectfully,

B. F. LEWIS.

10398 American Ave., Detroit, Mich.

Executive Committee—General Chairman, E. G. Lovering, 4552 Commonwealth Ave.; General Secretary, C. M. Phillips, 13421 Camden Ave.; E. V. Allen, A. T. Wagner, M. Beaubien, H. J. Jameson, W. W. McCord, C. H. Eldridge, H. M. Cherry.

Committee on Papers—Chairman, H. J. Jameson, 1415 23rd St.; Secretary, B. Lewis, 10398 American Ave.; J. Fritts, J. F. McCullough.

Budget Committee—Chairman, E. V. Allen, 6912 Garfield Ave.; Treasurer, C. M. Phillips, 13421 Camden Ave.; Geo. Kutzen, Chas. Cunningham, W. White, Chas. Mascola, H. J. Jameson.

Registration Committee—Chairman, C. M. Phillips, B. E. Miller, M. Hayes, M. Beaubien.

Program Committee—Chairman, A. T. Wagner, 230 Tuxedo Ave.; H. M. Cherry, C. H. Eldridge, E. V. Allen, H. Carr, F. C. Eichstaedt, W. White, Mr. Wagner, H. J. Jameson.

Information and General Reception Committee—Chairman, F. C. Eichstaedt, 2998 W. Gd. Blvd.; S. P. Brockway, Arthur Sutcliffe, G. A. Barrows, A. E. Shepherd, Sr., W. J. Patterson, J. Hay, Mr. Robinson.

Entertainment Committee—Chairman, W. W. McCord, 16209 Baylis Ave.; H. M. Cherry, Geo. Kutzen, W. White, B. Lewis, J. Fritts, A. T. Wagner, Mr. Mayer, M. Beaubien, E. V. Allen, Chas. Cunningham, H. J. Jameson.

Exhibit Committee—Chairman, C. E. Marker, 5015 Dailey St.; Secretary, Geo. Kutzen; Wylie Berger, O. Gollnick, E. Hartz, F. C. Eichstaedt.

Ladies' Committee—Mrs. E. V. Allen, Mrs. C. M. Phillips, Mrs.

H. J. Cherry, Mrs. Geo. Kutzen, Mrs. A. T. Wagner, Mrs. B. Lewis, Mrs. C. E. Marker, Mrs. F. C. Eichstaedt, Mrs. G. A. Barrows, Mrs. A. E. Shepherd.

C. M. PHILLIPS, Secretary.

NEWARK BRANCH

President Geo. Wagner opened our November 2nd meeting with 22 members and three visitors present. An interesting letter from our former President, Mr. George Onksen, now located in Anderson, Ind., was read by the secretary. Another application was presented and ordered to take the usual course.

Mr. Philip Sievering gave a detailed report of the Research Committee meeting held recently at Washington, D. C.

The Banquet Committee has been named; a meeting will be held at an early date and our April, 1929, banquet preparations will begin in earnest. Discussion on chromium plating under the direction of our librarian, Phil Sievering, brought out the fact that a P. H. of 5.6 to 6.2 should be maintained in the nickel solution to prevent peeling or raising of the nickel deposit when it is being chromium plated. Adjourned 10:30 P. M.

ROYAL F. CLARK, Secy.-Treas.

HARTFORD-CONNECTICUT VALLEY BRANCH

Hartford-Connecticut Valley Branch held its meeting on Monday evening, October 22, at the Junior Achievement League Building at 33 Pearl Street, Springfield, Mass.

Before the meeting, some of the members visited the plating room where they inspected the equipment used by the League members in the making and finishing of novelty ash trays, which was very interesting.

The meeting was called to order at 8:20 P. M. with President Elwin in the chair and an attendance of seventeen members.

Regular business was transacted which consisted of the paying of all bills and the election of one applicant to active membership in this branch. This was Mr. Fred Carlton of Burnside, Conn. (address 834 Burnside Avenue). It was voted to extend an invitation to the Steel Treaters Society to attend our next meeting in November in Hartford. Efforts are being made to secure as speaker for the evening, Mr. Oliver Sigelone, well known to all platers. It was also voted to have framed resolutions drawn up and presented to Mrs. Miller and Mrs. Bagshaw, by the branch, in respect to their husbands, deceased members of this branch.

Because of a confliction of dates, Dr. Webber of the Fiberloid Corp., who was scheduled to speak, was unable to attend the meeting, so we were left without a speaker for the evening.

The evening was spent in the discussion of the cause and remedy of spotting out on silver plated ware. One of the members also brought up a problem which caused much discussion. It was the question of what caused nickel plated work over cadmium to peel and curl on the sharp edge when put through a rolling machine test. Similar pieces nickel plated over copper did not peel or curl under the same test.

The meeting adjourned at 10:20 P. M.

VERNON GRANT, Secy.

BRIDGEPORT BRANCH

The minutes of the last meeting are as follows:

Meeting opened at 8:30. The roll call of officers was read; four officers were absent. Mr. O'Connor acted as President. Minutes of the last meeting were read and approved. Communication from Mr. Hogaboon was read.

We regret the loss of our member, Mr. George Belle, who died recently. Sargent at Arms was ordered to drape the charter for him and the Secretary was instructed to send a letter of sympathy to Mrs. George Belle.

We are very fortunate to have Mr. Hogaboon to be with us on November 16, known as Old Timers' Night. This meeting will be known as a question night meeting. Mr. Hogaboon will answer any questions that the members have to ask him. The Secretary has sent invitations to Hartford-Connecticut Valley and Waterbury Branches to be with us, also to the Manufacturer Association, so we hope to have a large attendance at this meeting. Mr. O'Connor gave us quite an interesting talk on his visit to Washington, where he attended the meeting of the Research Society.

The Treasurer's report was read and accepted. Meeting adjourned at 10 o'clock.

WM. A. EHRENCRONA, Secy.-Treas.

TORONTO BRANCH

The Toronto Branch, A. E. S., held its regular monthly meeting on Monday evening, October 22, at the Canadian Foresters' Hall, 22 College Street.

President John Walker called the meeting to order at 8:30. At the conclusion of the usual business Librarian Charles Kemish showed samples of materilas used in the manufacturing of carborundum, which was very interesting.

Mr. Walter Barrows being one of the Research Committee and having just returned from a conference held in Washington, gave an interesting outline of research work and the splendid progress made in this direction, which was also thoroughly enjoyed by all members present.

Arrangements are being made to hold a euchre party in November, when the members and their wives will meet to have another one of those enjoyable evenings.

Question: What makes chromium deposit soft?

Answer: Current density not in relation to temperature.

Adjournment at 11:30 P. M.

W. J. SUTHERLAND, Secy.-Treas.

PHILADELPHIA BRANCH

President's Letter

Our meeting on Sept. 7th was the beginning of our winter sessions, and on account of the repainting of the Chemical theatre, we held our meeting in one of the lecture rooms, and every seat was filled, which was a good beginning and we hope the same will continue throughout the winter, for then it will be a pleasure for the Educational Committee to make things interesting for you at the meetings.

Mr. Robson, of the Reynolds & Robson Co., gave a very interesting talk on "Polishing and Polishing Compounds," and the same appears in this issue.

At our next meeting, which will be on FRIDAY, OCT. 5th, Mr. Albert Hirsch will give a talk on his experience with the "SALT SPRAY," and in these days of Rust Proofing, this ought to be interesting.

Our weekly meetings and classes at the Kensington High School, Cumberland and Amber Sts., opened on Sept. 10th for the Elementary class with an attendance of 25, the members of this class are new members of our branch and assistants of foreman members of the branch.

The Advanced class is composed of Foreman Platers who have spent two years in the Elementary class. This class opened its winter season on Sept. 11th and will meet each Tuesday night.

The Advanced class has only 13 members and we are very much disappointed that all our resident members do not avail themselves of the opportunity this class offers.

Our first subject this year is Chromium Plating. The class expects to experiment upon the concentration of the Chromium Sulphate contents of the plating bath. It has all the appearance of a most interesting subject, for Chromium plating is attracting the attention of all platers throughout the country, and the data collected in this class will be invaluable to all who attend.

Now fellow members, if it pays old timers like Massicotte Mott and your President to attend these classes and keep up to the minute in our chosen vocation as Foreman Platers, there is no reasonable excuse why you shouldn't profit also, so come out next Tuesday night and

meet with us and instead of 13 members in the Advanced class let's make it 31 members and I am sure you can do this if you try.

Our yearly Banquet and meeting will take place at Mosebacks Hall on Saturday, November 24th, and as we had 262 last year, let our slogan be 300 this year. Start now and we will do better than 300.

Geo. Gehling, Pres.

BALTIMORE-WASHINGTON BRANCH

Baltimore-Washington Branch, A. E. S., held its regular monthly meeting November 10, at the Enoch Pratt Library, Calhoun and Hollins Street, President F. F. Pierdon presiding.

Mr. Parater was our speaker for the evening and had for his subject "Polishing and Preparing Metals for Plating." He spoke about emery wheels, showing us samples of work on which different grades of emery had been used. He also showed us a fine sample of Bright Brass Finish. He then explained his method of using and making an inside Bob and spoke in favor of lamb skin wheels. His talk was very interesting and a standing vote of thanks was given Mr. Parater for his lecture.

Mr. Faber also spoke on emery wheels, explaining how expenses could be reduced by proper heating of glue and emery in the making of same.

This Branch holds a meeting the third Saturday in each month at the Bureau of Standards, Washington, as an Educational Class. All members are requested to attend.

Two new members were elected. Eighteen members attended the meeting.

GEO. F. TURNER, Secy.

APPLICATIONS

	Branch
Louis Konvalinka	Chicago
A. J. Shaffer, 1114 George St., York, Pa.	Philadelphia
Wilbur M. Cole, % J. B. Ford Co., Wyandotte, Mich.	Philadelphia
Louis Golomb, 40 Hope St., East Rutherford, N. J.	Newark
J. B. Van Zunt, 129 Davenport St., Somerville, N. J.	Newark
Howard J. Johnson, Box 261, Trenton, Ontario Canada	Toronto

ELECTIONS

	Branch
John D. Owens, 644 Millard St., Camden, N. J.	Philadelphia
Gustave Fessenmeyer, 18719 Winslow Rd., Cleveland, O.	Cleveland

Gordon Giles, 183 Linsmore Cresent, Toronto, Canada.....Toronto
George Zimmerman, 915 Manning Ave., Toronto, Canada.....Toronto
S. H. Renton, 434 Fulton St., Pittsburgh, Pa.....Pittsburgh
Norman Bekkedahl, Bureau of Standards, Washington, D. C.....
Baltimore-Washington
Maurice R. Thompson, Bureau of Standards, Washington, D. C...
Baltimore-Washington
Gerald A. Lux, General Railway Signal Co., Rochester, N. Y.....
Rochester
George C. Bichler, 2803 McKoon Ave., Niagara Falls, N. Y..Rochester
Prescott A. Lyons, 74 Strong St., Rochester, N. Y.....Rochester
Harry W. Puffer, 54 Catalpa, Rd., Rochester, N. Y.....Rochester
John Van Doff, 611 Mable St., Kalamazoo, Mich.....Grand Rapids
Fredrick L. Carlton, 834 Burnside Ave., Burnside, Conn.....
Hartford-Connecticut Valley
Leon E. Jarhorian, % Eagle Plating Works, Worcester, Mass.....
Worcester
Geo. H. Sogegran, 15 Hermon St., Worcester, Mass.....Worcester
James Hughes, 110 Maple St., Gardner, Mass.....Worcester

TRANSFERS

	Branch
Thomas B. Haddow, from New York to	Newark

RESIGNED

	Branch
Chas J. C. Poe	Grand Rapids
Edmund P. Braun	Grand Rapids

DEATHS

	Branch
James A. Bagshaw	Hartford-Connecticut Valley

"IN MEMORIAM"

It is with deep regret and sympathy that we announce the death of Mr. James A. Bagshaw of New Britain, Conn., one of our most esteemed charter members. We extend our deepest sympathy to his wife in her bereavement.

HARTFORD-CON. VALLEY BRANCH,
V. E. Grant, Secy.

BOSTON

Platers' Supply Co., 202 Friend St., Boston. Secretary, A. W. Garrett, 45 King St., Dorchester, Mass.

BRIDGEPORT

Meets first and third Friday of each month at 62 Cannon St., Room 17, Bridgeport, Conn. Secretary, Wm. Ehrencrona, 872 Hancock Ave., Bridgeport, Conn.

CHICAGO

Meets second Saturday of each month, at 8 p. m., Atlantic Hotel, 316 S. Clark St. Secretary, S. J. C. Trapp, 1127 N. 7th St., Maywood, Ill.

CINCINNATI

Meets every Thursday, 7:30 p. m., at Vocational Training School, Spring and Liberty St. Secretary, Al. Yeager, 2021 Sherman Ave., Norwood, Ohio.

CLEVELAND

Meets first Saturday of each month at Hotel Winton. H. Terdoest, 414 Pioneer Ave., Akron, Ohio.

HARTFORD-CONN. VALLEY

Meets fourth Monday in each month alternately at 266 Pearl St., Hartford, Conn., and corner Broadway and Worthington St., Springfield. Secretary, Grant Vernon, 43 Putnam St., Bristol, Conn.

DAYTON

Meets first Saturday of each month at the Y. M. C. A., Dayton, Ohio. Secretary, Robert G. Suman, 2734 Ridge Road, Dayton, Ohio.

DETROIT

Meets the first Friday of each month at the Hotel Statler, Louis II Room, Detroit. Secretary, Chas. Phillips, 13421 Camden Ave., Detroit, Mich.

GRAND RAPIDS

Meets on the second Saturday of each month at the Vocational High School, 129 Bostwick Ave., N. E. Secretary, Jacob Van Dyke, 1361 Union Ave., N. E., Grand Rapids, Mich.

INDIANAPOLIS

Meets the second Saturday of each month at Hotel Denison. Secretary, Louis Mertz, 1725 Union St., Indianapolis, Ind.

MILWAUKEE

Meets second and fourth Thursdays of each month at Cor. 3rd St. and Highland Ave. J. N. Hock, 1229 W. 24th St., Milwaukee, Wis.

MONTREAL

Meets last Friday of month at Office of Secretary, John H. Feelay, 411 Aylmer St., Quebec, Canada.

NEWARK

Meets first and third Fridays of each month at Franklin Hall, 41 Franklin St., Newark, N. J., at 8 p. m. Secretary-Treasurer, Royal F. Clark, P. O. Box 201, Newark, N. J.

NEW YORK

Meets every second and fourth Fridays of each month in the World Building, Park Row, New York City, N. Y. Secretary, R. J. Liquori, 2439 Hubbard St., Brooklyn, N. Y.

PHILADELPHIA

Meets first Friday of each month in the Harrison Laboratory Building, University of Pennsylvania, 34th and Spruce Sts. Secretary, P. Uhl, 2432 North 29th St., Philadelphia, Pa.

PITTSBURGH

Meets first Friday of each month at 8 p. m., at downtown branch, Y. M. C. A. Secretary, S. E. Hedden, 227 Fifth St., Aspinwall, Pa.

PROVIDENCE-ATTLEBORO

Meets first and third Thursday of each month at 44 Washington St., Prov. Engineers Rooms, Providence, R. I. Secretary, J. H. Andrews, 19 Rosedale St., Providence, R. I.

ROCHESTER

Meets every third Friday of each month at the Powers Hotel. Secretary Chas. Griffin, 24 Garson Ave., Rochester, N. Y.

ST. LOUIS

Meets second Friday of each month at Central Y. M. C. A., 16th and Locust St. Secretary, C. T. McGinley, 8214 Fairham Ave, University City, Mo.

TOLEDO

Meets first Thursday of each month at Toledo Secor Hotel, corner Cherry and Page Sts. Secretary, W. W. Welker, 2228 Middlesex Rd., Route 2, Box 635, Toledo, Ohio.

TORONTO

Meets fourth Monday of each month at Canadian Foresters' Hall, 22 College St., Room No. 2. Secretary, W. J. Sutherland, 197 Gillard Ave., Toronto, 6, Canada.

WATERBURY

Meets every second and fourth Thursday of each month. Secretary, Wm. F Guilfoile, Garden Theatre Bldg., East Main St., Waterbury, Conn.